UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,303	10/14/2003	Eko N. Onggosanusi	TI-35477	7910

23494 7590 02/04/2009

TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER	
PUENTE, EVA YI	
ART UNIT	**PAPER NUMBER**
2611	

NOTIFICATION DATE	DELIVERY MODE
02/04/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com

Office Action Summary	Application No.	Applicant(s)	
	10/687,303	ONGGOSANUSI ET AL.	
	Examiner	Art Unit	
	EVA Y. PUENTE	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,6,9-11,14,19-23,28,30,33,34,36-40,42 and 45-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,3,6,9-11,14,19-23,30,33,34,36-40,42,45,46 and 53* is/are allowed.

6)☒ Claim(s) *28,47-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Amendment, filed 10/28/08, with respect to the rejection(s) of claim(s) 1, 3, 6, 9-11, 14, 19-23, 28, 30, 33-34, 36-40, 42, 45-53 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onggosanusi et al. (US 7,181,167) in view of Liang et al. (US 2003/0165131).

a) Regarding to claim 28, Onggosanusi et al disclose a method for interference-resistance using closed-loop transmit diversity (CLTD) (Fig. 2a) comprising:

a receiver receiving a signal (Fig. 3a);

the receiver computing a CLTD weighting vector from the received signal (compute weights block shown in Fig. 3a);

the receiver providing the CLTD weighting vector to a transmitter (feedback channel shown in Fig. 3a);

the receiver using the CLTD weighting vector to equalize the received signal (interference cancellation and equalization block shown in Fig. 3a);

a transmitter receiving the CLTD weighting vector (Fig. 2a); and

the transmitter applying the CLTD weighting vector to subsequent signal transmissions (W1-Wp shown in Fig. 2a).

Onggosanusi et al teach a CLTD CDMA system with all the subject matters above except to explicitly teach of the receiver comprises a despreader couples to an equalizer.

However, Liang et al, disclose a CDMA system, wherein the receiver comprises equalizing the received signal based on the output of a channel estimator (412 in Fig. 7); dispreading the equalized received signal (418 in Fig. 7); and coherent combining the despread equalized received signal (420 in Fig. 7). Equalizer and despreader are common and well known devices in a signal recovery design. Both Onggosanusi et al and Liang et al are directed to CDMA system. Therefore, it is obvious to one of ordinary skill in art at the time of invention was made to combine the despreader of Liang et al. in the CLTD system of Onggosanusi et al. This way a despreader is coupled to the equalizer of Onggosanusi et al for interference cancellation and equalization. By doing so, effective recover the transmitted signal and suppressing interference in a CDMA system.

4. Claims 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onggosanusi et al. (US 7,181,167) in view of Das et al (US 7,116,944).

a) Regarding to claim 47, Onggosanusi et al disclose a method for interference-resistance for multiple users using closed-loop transmit diversity (CLTD) (Fig. 2a) comprising:

receiving a first signal at a receiver (a plurality of antennas shown in Fig. 3a);

the receiver computing a first CLTD weighting vector from the first received signal (weights computation block shown in Fig. 3a);

the receiver providing the CLTD weighting vector to a transmitter (feedback channel shown in Fig. 3a);

receiving a second signal weighted by a second CLTD weighting vector at the receiver (W1-Wp shown in Fig. 2a); and

the receiver suppressing interference (interference cancellation and equalization block shown in Fig. 3a).

Onggosanusi et al disclose all the subject matters above except for the specific teaching of comparing the first and second weighting vectors.

However, Das et al disclose a CLTD system to eliminate feedback error due to weighting factors (Fig. 1). The receiver computes channel qualities and calculates weights. The changes in antenna weights are determined by comparing current antenna weights with previous weights (Col 8, L51-65). Therefore, it is obvious to one of ordinary skill in the art at the time of invention was made to combine the weights comparison technique by Das et al in the CLTD system of Onggosanusi et al. By doing so, prevents wrong feedback weights and data corruption in a CLTD system.

b) Regarding to claim 48, Das et al did not explicitly teach comparing if the first and second weighting vectors are the same. However, Das et al. disclose changes in weighting vectors are based on comparing the current and previous weighting vectors (Col 8, L51-65). It is obvious to one of ordinary skill in the art to recognize a result of comparing two elements must lead to a conclusion of whether they are the same or different. Therefore, the changes in weighting vector must be depending on whether the current and previous weighting vectors are the same or different.

c) Regarding to claim 49, Das et al did not explicitly teach a delay in the receiver before comparison of weighting vectors. However, Das et al. disclose changes in weighting vectors are based on comparing the current and previous weighting vectors (Col 8, L51-65). It is obvious to one of ordinary skill in the art to recognize a previous weighting vector must be delayed in order to compare with a current weighting vector.

5. Claims 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onggosanusi et al. (US 7,181,167) in view of Das et al (US 7,116,944), and in further view of Liang et al. (US 2003/0165131).

a) Regarding to claims 50-52, Onggosanusi et al. disclose a channel estimation and equalization (Fig. 3a) for interference suppression. Onggosanusi et al. did not explicitly teach of the receiver comprises a despreader.

However, Liang et al, disclose a CDMA system, wherein the receiver comprises equalizing the received signal based on the output of a channel estimator (412 in Fig. 7); dispreading the equalized received signal (418 in Fig. 7); and coherent combining

the despread equalized received signal (420 in Fig. 7). Equalizer, despreader, and combiner are common and well known devices in a signal recovery design. Both Onggosanusi et al and Liang et al are directed to CDMA system. Therefore, it is obvious to one of ordinary skill in art at the time of invention was made to combine the despreader of Liang et al. in the CLTD system of Onggosanusi et al. This way a despreader is coupled to the equalizer of Onggosanusi et al for interference cancellation and equalization. By doing so, effective recover the transmitted signal and suppressing interference in a CDMA system.

Allowable Subject Matter

6. Claims 1, 3, 6, 9-11, 14, 19-23, 30, 33-34, 36-40, 42, 45-46, and 53 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Y Puente whose telephone number is 571-272-3049. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eva Yi Puente
/E. Y. P./
Examiner, Art Unit 2611

January 30, 2009

/Chieh M Fan/
Supervisory Patent Examiner, Art Unit 2611